



#5

## SEQUENCE LISTING

<110> DIVERSA CORPORATION  
Murphy, Dennis  
Ried, John

<120> ENZYMES HAVING ALPHA-GALACTOSIDASE ACTIVITY AND METHODS OF USE THEREOF

<130> DIVER1120-4

<140> 09/886,400

<141> 2001-06-20

<150> 09/619,032

<151> 2000-07-19

<150> 09/407,806

<151> 1999-09-20

<150> 08/613,220

<151> 1996-03-08

<160> 4

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 52

<212> DNA

<213> Artificial Sequence

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<223> polynucleotide probe

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<212> DNA

<213> Artificial Sequence

<220>

<223> polynucleotide probe

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<210> 3

<211> 1095

<212> DNA

<213> Thermococcus alcaliphilus

<220>

<221> CDS

<222> (1)...(1092)

<400> 3

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48

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1				5					10					15		
aag	agc	gaa	atc	cca	aag	gtc	ata	gag	aag	gca	tac	atc	cca	gtc	atc	96
Lys	Ser	Glu	Ile	Pro	Lys	Val	Ile	Glu	Lys	Ala	Tyr	Ile	Pro	Val	Ile	
			20					25					30			
gag	aca	ctg	att	aaa	gaa	gaa	att	cct	ttt	ggg	ctc	aac	ata	acg	ggc	144
Glu	Thr	Leu	Ile	Lys	Glu	Glu	Ile	Pro	Phe	Gly	Leu	Asn	Ile	Thr	Gly	
			35				40					45				
tat	acc	tta	aag	ttc	ctc	ccg	aag	gat	att	ata	gac	ctc	gtt	aaa	ggg	192
Tyr	Thr	Leu	Lys	Phe	Leu	Pro	Lys	Asp	Ile	Ile	Asp	Leu	Val	Lys	Gly	
			50			55					60					
ggc	atc	gcg	agt	gac	ctg	ata	gag	ata	atc	gga	acg	agc	tac	acg	cac	240
Gly	Ile	Ala	Ser	Asp	Leu	Ile	Glu	Ile	Ile	Gly	Thr	Ser	Tyr	Thr	His	
	65				70				75						80	
gca	ata	ctc	ccc	ctc	ctc	ccg	ctt	agc	aga	gta	gaa	gca	caa	gtt	cag	288
Ala	Ile	Leu	Pro	Leu	Leu	Pro	Leu	Ser	Arg	Val	Glu	Ala	Gln	Val	Gln	
				85				90						95		
aga	gat	agg	gaa	gtt	aag	gaa	gag	ctc	ttc	gag	ctt	tct	cca	aag	gga	336
Arg	Asp	Arg	Glu	Val	Lys	Glu	Glu	Leu	Phe	Glu	Leu	Ser	Pro	Lys	Gly	
			100				105						110			
ttc	tgg	ctg	cca	gag	ctc	gcc	tat	gac	ccg	ata	atc	cct	gcc	ata	ctg	384
Phe	Trp	Leu	Pro	Glu	Leu	Ala	Tyr	Asp	Pro	Ile	Ile	Pro	Ala	Ile	Leu	
		115				120						125				
aag	gac	aac	ggt	tat	gag	tat	cta	ttc	gcc	gac	ggg	gag	gcg	atg	ctt	432
Lys	Asp	Asn	Gly	Tyr	Glu	Tyr	Leu	Phe	Ala	Asp	Gly	Glu	Ala	Met	Leu	
	130					135					140					
ttc	tca	gct	cat	ctc	aac	tcg	gcg	ata	aag	cca	att	aaa	ccg	ctc	tat	480
Phe	Ser	Ala	His	Leu	Asn	Ser	Ala	Ile	Lys	Pro	Ile	Lys	Pro	Leu	Tyr	
	145				150					155				160		
cca	cac	ctt	ata	aag	gcc	caa	agg	gaa	aag	cgc	ttt	agg	tac	atc	agc	528
Pro	His	Leu	Ile	Lys	Ala	Gln	Arg	Glu	Lys	Arg	Phe	Arg	Tyr	Ile	Ser	
				165				170						175		
tat	ctc	ctt	ggt	ctc	agg	gag	ctt	agg	aag	gcg	ata	aag	ctc	gtt	ttt	576
Tyr	Leu	Leu	Gly	Leu	Arg	Glu	Leu	Arg	Lys	Ala	Ile	Lys	Leu	Val	Phe	
			180				185						190			
gaa	ggt	aag	gta	acg	cta	aag	gca	gtc	aaa	gac	atc	gaa	gcc	gta	ccc	624
Glu	Gly	Lys	Val	Thr	Leu	Lys	Ala	Val	Lys	Asp	Ile	Glu	Ala	Val	Pro	
		195				200					205					
gtt	tgg	gtg	gcc	gtg	aac	acg	gct	gta	atg	ctc	ggc	atc	gga	agg	ctt	672
Val	Trp	Val	Ala	Val	Asn	Thr	Ala	Val	Met	Leu	Gly	Ile	Gly	Arg	Leu	
		210			215						220					
cct	ctt	atg	aat	cct	aag	aaa	gtg	gcg	agc	tgg	ata	gag	gac	aag	gac	720
Pro	Leu	Met	Asn	Pro	Lys	Lys	Val	Ala	Ser	Trp	Ile	Glu	Asp	Lys	Asp	
	225				230					235				240		
aac	att	ctt	cta	tac	ggc	acc	gat	ata	gag	ttc	att	ggc	tat	agg	gac	768
Asn	Ile	Leu	Leu	Tyr	Gly	Thr	Asp	Ile	Glu	Phe	Ile	Gly	Tyr	Arg	Asp	

245	250	255	
att gca ggc tac aga atg agt gtt gag gga tta tta gag gtt ata gac			816
Ile Ala Gly Tyr Arg Met Ser Val Glu Gly Leu Leu Glu Val Ile Asp			
260	265	270	
gag ctc aac tcg gaa ctg tgc ctt ccc tca gag ctg aag cac agt gga			864
Glu Leu Asn Ser Glu Leu Cys Leu Pro Ser Glu Leu Lys His Ser Gly			
275	280	285	
agg gag ctc tac tta cgg act tcg agt tgg gca cca gat aag agc ttg			912
Arg Glu Leu Tyr Leu Arg Thr Ser Ser Trp Ala Pro Asp Lys Ser Leu			
290	295	300	
agg ata tgg aga gag gac gaa ggg aac gca aga ctt aat atg ctg tcc			960
Arg Ile Trp Arg Glu Asp Glu Gly Asn Ala Arg Leu Asn Met Leu Ser			
305	310	315	320
tac aat atg agg ggc gaa ctc gcc ctt tta gcc gag aac agc gat gca			1008
Tyr Asn Met Arg Gly Glu Leu Ala Leu Leu Ala Glu Asn Ser Asp Ala			
325	330	335	
agg gga tgg gag ccc ctc cct gag agg agg ctg gat gcc ttc cgg gcg			1056
Arg Gly Trp Glu Pro Leu Pro Glu Arg Arg Leu Asp Ala Phe Arg Ala			
340	345	350	
ata tat aac gat tgg agg ggt gaa aat ggg gaa cct tag			1095
Ile Tyr Asn Asp Trp Arg Gly Glu Asn Gly Glu Pro			
355	360		

&lt;210&gt; 4

&lt;211&gt; 364

&lt;212&gt; PRT

&lt;213&gt; Thermococcus alcaliphilus

&lt;400&gt; 4

Leu Arg Ala Leu Val Phe His Gly Asn Leu Gln Tyr Ala Glu Ile Pro			
1	5	10	15
Lys Ser Glu Ile Pro Lys Val Ile Glu Lys Ala Tyr Ile Pro Val Ile			
20	25	30	
Glu Thr Leu Ile Lys Glu Glu Ile Pro Phe Gly Leu Asn Ile Thr Gly			
35	40	45	
Tyr Thr Leu Lys Phe Leu Pro Lys Asp Ile Ile Asp Leu Val Lys Gly			
50	55	60	
Gly Ile Ala Ser Asp Leu Ile Glu Ile Ile Gly Thr Ser Tyr Thr His			
65	70	75	80
Ala Ile Leu Pro Leu Leu Pro Leu Ser Arg Val Glu Ala Gln Val Gln			
85	90	95	
Arg Asp Arg Glu Val Lys Glu Glu Leu Phe Glu Leu Ser Pro Lys Gly			
100	105	110	
Phe Trp Leu Pro Glu Leu Ala Tyr Asp Pro Ile Ile Pro Ala Ile Leu			
115	120	125	
Lys Asp Asn Gly Tyr Glu Tyr Leu Phe Ala Asp Gly Glu Ala Met Leu			
130	135	140	
Phe Ser Ala His Leu Asn Ser Ala Ile Lys Pro Ile Lys Pro Leu Tyr			
145	150	155	160
Pro His Leu Ile Lys Ala Gln Arg Glu Lys Arg Phe Arg Tyr Ile Ser			
165	170	175	
Tyr Leu Leu Gly Leu Arg Glu Leu Arg Lys Ala Ile Lys Leu Val Phe			
180	185	190	

